

REMARKS

Claims 1-35 are pending in the present Application. By this Amendment, new claims 36-43 have been added, and no claims have been cancelled or withdrawn. Accordingly, claims 1-43 are currently at issue.

I. Summary of Examiner Interview

On July 21, 2008, Examiner Bell conducted a telephonic interview with Applicant's attorney Gregory G. Schlenz. Applicant thanks Examiner Bell for his time in conducting the interview.

In the Interview, the Examiner discussed the meaning of several portions of the specification, as well as the scope and meaning of claims 1 and 19 with Applicant's attorney, in connection with the present rejections under §112. The Examiner agreed to withdraw the §112 rejection of claim 19, and amendments to overcome the §112 rejections of claims 1 and 26 were also discussed. The present rejections of claims 1 and 26 under §103 were also briefly discussed, and no agreement on the patentability of the claims was reached.

II. Rejections Under 35 U.S.C. § 112

In paragraph 2 of the Office Action, claims 1, 19, and 26 were rejected under 35 U.S.C. § 112, second paragraph, as being vague and indefinite.

Claims 1 and 26 have been amended to clarify that the position detector is configured for detecting a position of a component of the actuator (the piston or the piston rod), rather than directly detecting the position of the crustbreaker itself. The specification of the present Application discloses, among other embodiments, detecting the predetermined low position of the crustbreaker indirectly by using a position detector to detect the position of the piston (36) or the rod (32). (See P. 13, Lns. 12-14: "the actuator (31) comprises two discontinuous position detectors (40, 40') capable of detecting specific positions of the actuator rod (32) and therefore the crustbreaker (33)"; See also P. 13, Lns. 8-11: "this detector may comprise ... a second friction contact (44) (typically fixed to the rod (32) or the piston (36) of the actuator)"). The

Examiner indicated in the Interview that an amendment such as this would likely address the rejections of claims 1 and 26 under § 112. Accordingly, these rejections have been addressed, and Applicant respectfully requests withdrawal of the same.

Applicant submits that the rejection of claim 19 was fully addressed in the Examiner Interview, where Applicant's attorney clarified that the recited "position at which the crustbreaker comes into contact with the liquid electrolyte bath" does not require a measurement directly on the cell. Rather, in the embodiment disclosed at P. 9, Lns. 7-10, this position is a predetermined position where the crustbreaker is estimated or expected contact the bath. Accordingly, this rejection has been addressed, and Applicant respectfully requests withdrawal of the same.

III. Rejections Under 35 U.S.C. § 103

In paragraph 4 of the Office Action, claims 1-35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over German Utility Model Registration No. DE 299 10 803 ("the DE reference"), in view of U.S. Patent No. 6,436,270 to Sander ("Sander"). Applicant respectfully traverses these rejections in light of the amendments herein.

A. Claims 1-25

Claim 1, as amended, includes, among other features, "measuring the moment at which the crustbreaker reaches a predetermined low position ... determining the value of at least one powder material feed operation indicator, based on the measured moment ... using at least one operation criterion and the value of the operation indicator to determine whether an operation is abnormal." The cited references do not disclose, teach, or suggest at least this feature of claim 1. More specifically, neither the DE reference nor Sander discloses measuring the time between the actuation of the crustbreaker and its arrival at a predetermined lower position.

The DE reference discloses measurement of a *complete* cycle time. In other words, the DE reference discloses detecting failures of the crustbreaker by measuring the complete time of travel of the crustbreaker in a round trip between the initial upper position and the return to the same upper position. (See P. 9, Lns. 33-46 of the English translation). While the DE reference

does disclose a sensor (S2) for measuring the end position of the piston, there is no measurement of the time taken for the piston to reach the end position. Rather, the sensor (S2) merely acts to give “a signal to the operating valve, 8, to make it possible to switch to the circuit, 69, to return the piston, 4, to the start position.” (P. 9, Lns. 37-39). The DE reference does not disclose any measurement of the time for the piston to reach a predetermined lower position, nor the use of such a time measurement to detect abnormal operations. Accordingly, the DE reference does not disclose, teach, or suggest this feature of claim 1.

Sander discloses active *detection* of the lower position for a reference measurement, rather than using a *predetermined* lower position. Sander discloses detecting the time at which the crustbreaker enters into electrical contact with the melt, thus incorporating measurements directly on the cell itself. (See Col. 3, Lns. 10-17). In contrast, the use of a predetermined position, as recited in claim 1, avoids the necessity of making a measurement directly on the cell itself. Accordingly, Sander also does not disclose, teach, or suggest this feature of claim 1.

Thus, neither of the cited references discloses, teaches, or suggests at least the above feature of claim 1, and no prima facie case of obviousness can be established with respect to claim 1. Claims 2-25 depend from claim 1 and include all the elements thereof. Accordingly, for at least the same reasons stated above, no prima facie case of obviousness can be established with respect to claims 2-25.

B. Claims 26-35

Claim 26, as amended, includes, among other features, “a device for measuring the moment t at which the crustbreaker reaches a predetermined low position ... and a diagnostic means for determining the value of at least one feed operation indicator starting from a value of time t_0 and a value obtained for time t .” The cited references do not disclose, teach, or suggest at least this feature of claim 26.

As stated above with respect to claim 1, neither the DE reference nor Sander discloses the measurement of the moment at which the crustbreaker reaches a predetermined lower position. The DE reference discloses the measurement of a complete cycle time, while Sander discloses

detection of the time when the crustbreaker contacts the electrolyte bath. Additionally, neither the DE reference nor Sander discloses any determination of a feed operation indicator using the moment at which the crustbreaker reaches the predetermined lower position. Thus, neither of the cited references discloses, teaches, or suggests at least the above feature of claim 26, and no prima facie case of obviousness can be established with respect to claim 26.

Claims 27-35 depend from claim 26 and include all the elements thereof. Accordingly, for at least the same reasons stated above, no prima facie case of obviousness can be established with respect to claims 27-35.

IV. New Claims

Applicants submit that new claims 36-43 are patentable over the references cited in the present Office Action, for the reasons briefly described below.

Claim 36 includes, among other features, "measuring a descent duration for the crustbreaker to reach a predetermined low position after activation of the actuator; determining, based on the descent duration, whether an operation of the electrolytic cell is abnormal." As described above with respect to claim 1, the cited references do not disclose any measurement of the time for the piston to reach a predetermined lower position, nor the use of such a time measurement to detect abnormal operations. Accordingly, for similar reasons to those stated above, the cited references do not disclose, teach, or suggest all the features of claim 36, and claim 36 is patentable over the cited references.

Claims 37-43 depend from claim 36 and include all the features thereof. Thus, for at least the same reasons, claims 37-43 are patentable over the cited references.

CONCLUSION

In view of the foregoing, Applicant respectfully requests reconsideration of the Examiner's rejections and allowance of claims 1-35 in the present Application. Applicant also respectfully requests examination and allowance of new claims 36-43. Applicant submits that the Application is in condition for allowance and respectfully requests an early notice of the same.

Respectfully submitted,

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